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PATENT APPLICATION
Docket No. 15689.49.1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of		)
	Takehiro Nakamura et al.	)
Serial No.:	10/673,683	) Art Unit) 2611
Filed:	September 29, 2003	)
Conf. No.:	4169	)
For:	BASE STATION APPARATUS OF MOBILE COMMUNICATION SYSTEM	)
Examiner:	Kevin Kim	)
Customer No.:	022913	)

REQUEST FOR PRE-APPEAL BRIEF CONFERENCE

In response to the Final Office Action ("OA"), mailed Aug. 4, 2009, and pursuant to the July 12, 2005, OG Notice regarding the Pre-Appeal Brief Conference Pilot Program, and the February 7, 2006 OG Notice extending the program, Applicants respectfully request panel review and allowance of the rejected claims in light of the Examiner's clear errors discussed below. This Request is being filed concurrently with a Notice of Appeal.

A request for a pre-appeal brief review of rejections set forth in an Office Action is proper when (1) the application has been at least twice rejected; (2) Applicant concurrently files the Request with a Notice of Appeal and prior to an Appeal Brief; and (3) Applicant submits a Pre-Appeal Brief Request for Review that is five (5) or less pages in length and sets forth legal or factual deficiencies in the rejections. *See* Official Gazette Notice, July 12, 2005. Applicants have met each of these requirements and therefore request review of the Examiner's rejections in the Final Office Action for the following reasons.

The Final Office Action rejected Claims 5–10 under 35 U.S.C. 103(a) as being unpatentable over Marchetto et al., United States Patent No. 5,914,959 ("Marchetto") in view of

Hassan, United States Patent No. 5,901,185 ("Hassan"). *See* Office Communication pp. 3–5 (paper no. 20090803, Aug. 4, 2009) ("FOA"). The rejections of the FOA are improper and should be withdrawn for the following legal and factual reasons.

Independent claims 7 and 9 both recite, *inter alia*, the limitation "pilot symbols [are] inserted, such that a ratio of the number of the pilot symbols to the total number of symbols in a single slot of the signal becomes smaller in a case where a transmission rate of the signal is high, than that in a case where the transmission rate is low." The Applicants submit that this limitation is not taught or suggested by the prior art.

The Examiner conceded that "Marchetto . . . fails [to] teach that a ratio of a number of the pilot symbols to a total number of symbols in a single slot of the signal becomes smaller when the rate is high than the rate is low." FOA p. 4. The Examiner also conceded that "Hassan [] does not explicitly teach[] the ratio of pilot symbols in a slot to total symbols in the slot is smaller in a higher rate than in a lower rate." FOA p. 2.

The Examiner then asserted that "Hassan teaches than an appropriate (in other words, optimal) number of pilot symbols should be used for reducing the bit error rate and, at the same time, the overhead." FOA p. 4 (*citing* Hassan col. 4 l. 48–64). The Applicants note that "a ratio . . . becom[ing] smaller" is recited in the limitation, not the use of an "appropriate" or "optimal" (in the Examiner's words) number of pilot symbols. From the Examiner's own characterization of Hassan (but not Hassan, itself), the Examiner then concludes that

> "since it is desirable to minimize the number of pilot (sic) in order to reduce overhead, *when a same number of pilot symbols is used for high and low transmission rates*, the ration of the optimized number of pilot symbols to the total number of symbols would have been smaller when the transmission rate is higher than it is when the transmission rate is lower." FOA p. 4 (emphasis added).

The Examiner's assertions and conclusions are incorrect for at least the following reasons. The portion of Hassan cited by the Examiner discloses:

> "In order to reduce the bit error rate, pilot symbols may be inserted in the symbol sequence at a smaller intervals to reduce the separation between the pilot symbols and to increase the accuracy of the . . . channel transfer characteristic . . . . however, increasing the frequency of pilot symbols in the transmitted symbol

> sequence can reduce the potential information capacity of the channel. Adding pilot symbols may also reduce power efficiency by wasting transmit power in non-informational symbols." Hassan col. 4 l. 48–64.

So, Hassan teaches that "pilot symbols may be inserted at smaller intervals," but doing so may cause the undesirable problems of "reduc[ing] the potential information capacity of the channel" and "reduc[ing] power efficiency."

From this portion of Hassan – which, as the Examiner concedes, does not teach the relevant limitation – the Examiner concludes that "a ratio of the number of the pilot symbols to the total number of symbols in a single slot of the signal becomes smaller in a case where a transmission rate of the signal is high, than that in a case where the transmission rate is low" would have been obvious. This is a legal and factual error. The Examiner has impermissibly supplied a limitation which is not taught or suggested by the cited combination of references.

In view of the file history, it appears that the Examiner relies on the "obvious to try" test of KSR Int'l Co. v. Teleflex, Inc., 550 U.S. 398 (2007). According to MPEP § 2141 III (E), a rationale supporting a conclusion of obviousness is "'Obvious to try' - choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success."

The Applicants submit that "a ratio of the number of pilot symbols to the total number of symbols in a single slot of the signal becomes smaller in a case where a transmission rate of the signal is high, than that in a case where the transmission rate is low," as recited in independent claims 7 and 9, is not a result of choosing from a finite number of identified, predictable solutions. (Nor can it be arrived at by any of the other exemplary rationales of MPEP § 2141 III.)

The recited limitation defines a tendency in which the ratio should be smaller when the transmission rate is high. This recited tendency does not belong to identified, predictable solutions, and the Applicants submit that the combination of the references cited fails to teach or suggest such a tendency of a ratio. Prior to the inventors finding such a tendency, those skilled in the art could not and did not predict that there was such a tendency.

The Applicants also submit that there was no reasonable expectation of success in finding the tendency defined in the claims. Prior to the inventors finding such a tendency, those skilled in the art could not and did not predict that there was such a tendency.

Therefore, the Applicants submit that the Examiner's reasoning and conclusions constitute impermissible hindsight including knowledge gleaned only from the Applicants' disclosure.

The Examiner states "when a same number of pilot symbols is used for high and low transmission rates, the ratio of the optimized number of pilot symbols to the total number of symbols would have been smaller when the transmission rate is higher that it is when the transmission rate is lower." FOA p. 4. However, the Examiner's assumption (i.e., "a same number of pilot symbols is used for high and low transmission rates") is no more than a presumption and, further, is incorrect. Although the Examiner does not explicitly clarify which "same number of pilot symbols" is used, the Applicants suppose that the Examiner intends that "a same number of pilot symbols *per time slot*" is used for both high and low transmission rates.

However, according to Specification § 4.1.2.3, "Signal Formats of the Physical Channels," in conjunction with Fig's 5–6, the optimal numbers of pilot symbols per time slot *varies depending on the symbol rates*, such as six for the symbol rate of 32 ksps (kilosymbols per second), and 16 for the symbol rate of 128 ksps. Specification ¶ 0226 (emphasis added). This is clearly not, as the Examiner has asserted and relies upon for his conclusion, "a same number of pilot symbols." FOA p. 4.

Further, as described in Specification Fig's 5–6, the horizontal axis represents the number of pilot symbols contained in each time slot whereas the vertical axis represents a necessary Eb/Io in a state that meets a quality required, where Eb is the required received power per bit after the error correction and Io is the interference power per unit frequency band. As shown in Fig. 5 for 32 ksps, when the number of pilot symbols per time slot are six, the Eb/Io is minimum. As shown in Fig. 6 for 128 ksps, when the number of pilot symbols per time slot are 16, the Eb/Io is minimum. The Specification summarizes "The optimum number of the pilot symbols *varies depending on the symbol rates*, such as six for 32 ksps and 16 for 128 ksps." Specification ¶ 0226. Therefore, the number of the pilot symbols per time slot for a high transmission rate is not the same as that for a low transmission rate and, thus, the Examiner's assumption is demonstrably incorrect.

For the foregoing reasons, the Applicants submit that there is a clear deficiency in a *prima facie* case in support of rejection under 35 U.S.C. § 103. The Examiner has impermissibly supplied limitations not taught or suggested by the prior art and has relied upon incorrect

assumptions in order to arrive at his conclusions. Accordingly, the Applicants respectfully request the final rejections be withdrawn. As the rejections under 35 U.S.C. § 103 in view of Marchetto and Hassan are the only remaining rejections, the Applicants also request the claims be allowed as currently presented.

Dated this 3rd day of November, 2009.

Respectfully submitted,

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